

Notes 10/9 - Composition Part 2

$$f(x) = \underline{5x + 2} \quad g(x) = \underline{-2x}$$

Ex 1:  $(f \circ g)(x) = f[g(x)]$

■ Use structure of outside function.

$$= 5(-2x) + 2$$

$$f[g(x)] = \boxed{-10x + 2}$$

Ex 2:  $(g \circ f)(x) = g[f(x)]$

$$= -2(5x + 2)$$

$$= \boxed{-10x - 4}$$

$$f(x) = \underline{2x^2 - x}$$

$$g(x) = \underline{3x + 1}$$

Ex 3:  $(g \circ f)(x) = g[f(x)]$

$$= 3(2x^2 - x) + 1$$

$$= 6x^2 - 3x + 1$$

○

$$f(x) = 2x^2 - x$$

$$g(x) = 3x + 1$$

Ex 4:

$$(f \circ g)(x) = f[g(x)]$$

$$(3x+1)(3x+1)$$

$$9x^2 + 3x + 3x + 1$$

	3x	1
3x	9x <sup>2</sup>	3x
1	3x	1

$$= 2(3x+1)^2 - (3x+1)$$

$$= 2(3x+1)(3x+1) - 3x - 1$$

$$= 2(9x^2 + 6x + 1) - 3x - 1$$

$$= 18x^2 + 12x + 2 - 3x - 1$$

$$= \boxed{18x^2 + 9x + 1}$$